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ABSTRACT

This paper reviews some of the recent literature from the field of psycholinguistics and relates it to the reading process and to the classroom situation. A brief description of linguistics and psychology is provided, and research studies in the general areas of phonics, comprehension, cultural differences, and pedagogical and diagnostic methods are identified. The literature reviewed in this paper suggests that reading is a cognitive process which translates visual stimuli into underlying language units and that while reading growth is facilitated by oral language sophistication, it is not dependent on speech ability--a theory that has implications for speakers of nonstandard English. A 36-item bibliography is included. (Author/PD)

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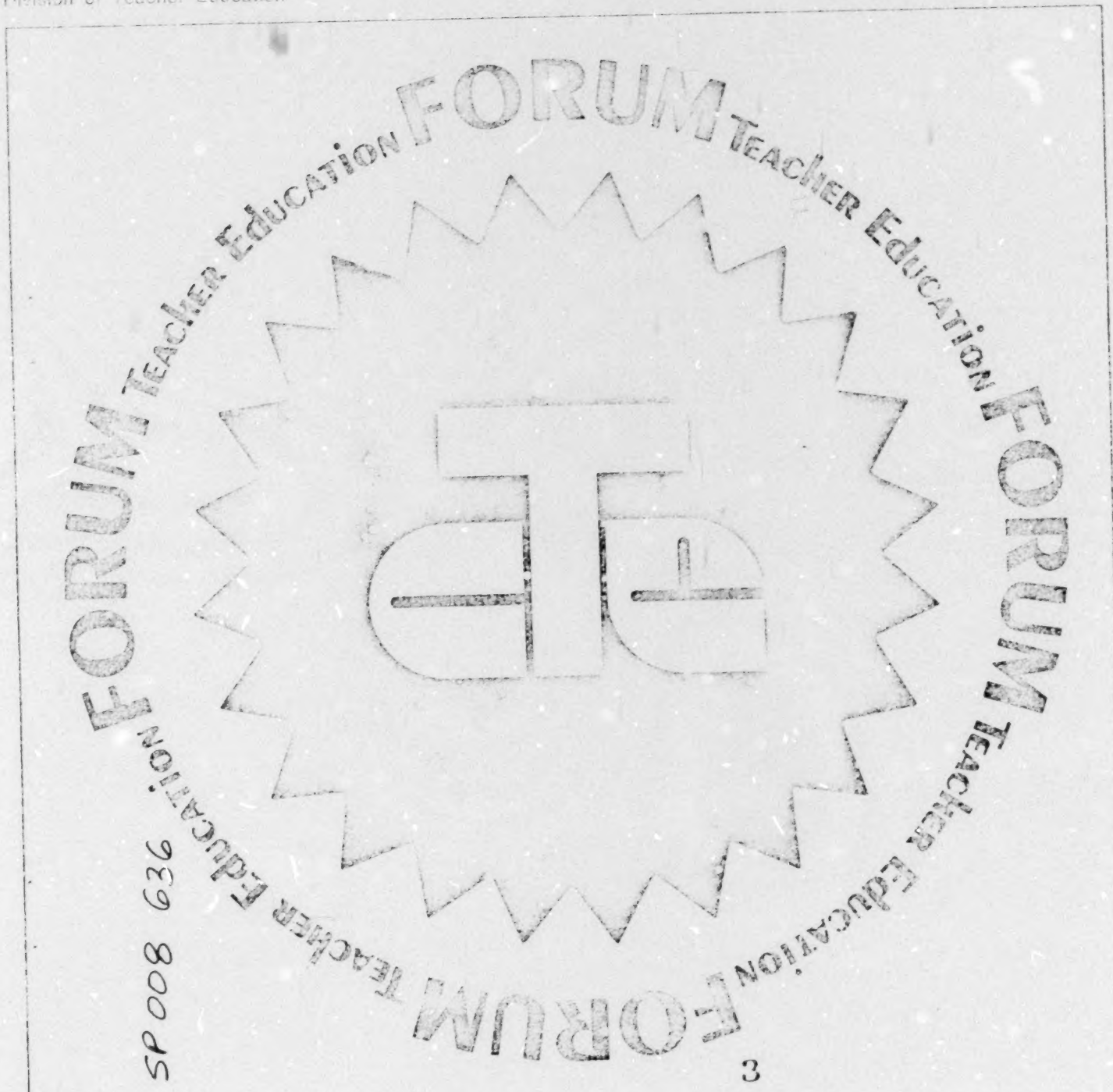

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SOME PSYCHOLINGUISTIC CONSIDERATIONS FOR PROCESS AND PEDAGOGY IN READING

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INTRODUCTION

Any reading curriculum should be based on an explicit model of the reading process. Since reading is both a language and a cognitive process, one would expect to find references in the literatures of linguistics and of psychology. These more theoretical areas should provide at least the framework of the reading model; it is the responsibility of education to apply and test the model.

Linguistics

Linguistics is the descriptive study of language. The linguist looks at the spoken language as a system, independent of individual speakers. He is more concerned with the form of language than with its content; in describing the system he asks only whether it is comprehended, not how.

Most people in and out of the field of linguistics credit Noam Chomsky with changing the frontiers of linguistics more than any other person in the last two decades. Chomsky sets forth the idea that every speaker uses a generative grammar that "...attempts to account for what the speaker actually knows, not what he may report about his knowledge" (6:3). The main ingredient of his theory is the "ideal speaker-listener" (6:8). In other words, the linguist has as a main interest the study of the oral language rather than that of the written language.

Although no more or less theoretical than other fields of study, linguistics does not lend itself readily to practical application in the reading and/or language arts classroom. Moreover, most linguists just are simply not concerned with application. They prefer to leave that to others. For example, some linguists, such as Koutsoudas, consider linguistics to be more akin to scientific philosophy and logic than to behavioral science. The behavior (even the speech) of the ideal speaker-hearer is thought to be of limited interest (7,17).

In modern linguistics, virtually the only group concerned with written language is the diachronic or comparative linguists, and they are concerned only insofar as their dead language manuscripts and documents reflect how languages were once spoken. This branch of the linguistic discipline offers explanations to the student or teacher who is mystified by the vagaries of English spelling--e.g. how it is that the words <u>what</u>, <u>rough</u> and <u>knee</u> came to be pronounced /wat/, /raf/, and /niy/ -- but it is not much help in developing a model of the reading process. Linguistics supplies only some vocabulary.

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Psychology

The psychologist relates language to thought. He is concerned with how language relates to certain types of behavior; how it relates to learning; and how it is learned from a developmental standpoint.

Psychology classifies all language behavior as cognitive and/or strictly human. Only a few dogged behaviorists persist in trying to describe language use and language learning in Skinnerian terms, that is, a straight stimulus-response framework (26). Psycholinguistic research actually began as a response to the failure of the behavioral models. Tagmemics and communication theories were all tried initially (22) but all to little avail until George Miller "discovered" Noam Chomsky and transformational grammar (20, 21).

In 1962 it seemed that the answers to the psychologists' questions were at hand. This was premature and, in retrospect, naive. First of all, it took the psychologists half a decade to realize that they were not asking the same questions as the linguists were. (The linguists in the meanwhile, had changed their questions and stopped speaking to the psychologists.) While the psychologists geared all their research to the perception/comprehension of language; the linguistic model was one of production/generation. Also, psychological studies often required their subjects to read and write; the linguistic model was strictly oral. This raises two central questions, particularly for one who would develop a model of reading:

1. Is there a relationship between the cognitive processes employed in producing language (talking, writing) and in perceiving it (reading, listening)?

2. What is the relationship between oral and graphic language - is the latter superimposed on the former or independent of it?

The diagram shown here depicts the comparisons that must be made to satisfactorily answer these questions. Each square represents a language modality that should be described and compared to the others. Most of the work to date has been in the areas of A and C. But these are new questions and, even among those who recognize their validity and importance, relatively little research is being done.

	Language Form	
	Oral	Graphic
Generation	A	B
Perception	C	D

It is difficult to operationalize these issues; one rapidly finds himself in a tangle of neurology, physics and philosophy. The book Language by Ear and by Eye, edited by James Kavanagh and Ignatius Mattingly, is the record of a conference on these queries and provides a summary of much recent research relevant to them.

The question of the relationship of spoken and written language is addressed directly and indirectly by those attending the conference. Lotz

(14:123) states that reading and writing are analagous to and parallel with listening and speaking. It is this view that John Carroll advocates when he suggests that all literate people have graphic as well as phonemic cognitive referents. This assertion seems especially reasonable in the context of ideographic writing systems and Samuel Martin's paper provides some interesting examples of literate and semi-literate punning in Chinese and Japanese. But Carroll maintains that a skilled reader in an alphabetic system must respond to entire words/graphic representations and even larger units, too. As evidence that reading does more than graph sound to letters, he offers phonologically ambiguous sentences - e.g. "the sons raise meat." and "the sun's rays meet." He asserts that there is no ambiguity experienced in reading either of them.

With regard to the independence of the oral and graphic language modalities, Conrad points out that congenitally deaf and dumb children can learn to read without phonological coding. He concludes, however, that while "...reading is almost certainly possible with no phonology involved at all...(that)...with phonology it is a great deal easier," for the child to learn to read (14:237). From this it can be concluded that the graphic and oral modalities interact. Reading is independent of spoken language only insofar as abstract language systems (grammars) are. To attempt to deal with them separately is often impractical.

Still, there are obvious physiological differences between reading and listening at the receptor level. The eye processes discreet stimuli in the form of words; the ear processes continuous ones in the form of the acoustic stream. Gough's (14) suggestion that reading proceeds letter by letter is not new, but as Brewer (14:359) points out, neither are the studies that refute it. In the early 1900's Wundt established that whole words can be read almost as quickly as lists of letters. Still, such serial models of visual perception persist. The analysis-by-synthesis models of oral and written language perception appeal to behavioral scientists because they are regular and specifiable. However, they are also cumbersome and unrealistic. The fact that current theory cannot explain how language competence could influence perception does not alter the fact that competence does just that. These studies largely assume that the brain must sift out physical differences in stimuli to arrive at meaning (comprehension).

All agree that whatever is apprehended by the eye (or ear) ends up in short term memory (STM) before going to The Place Where Sentences Go When They Are Understood (TPWSGWTAU). And most concede that STM is most efficient with phonological and/or underlying meaning data. The reader needs to hold on to one or more words or ideas somewhere, while considering the related implications of subsequent words or ideas, and as Conrad points out (14:237) "there is abundant evidence that STM thrives on speechlike input;" he could as well have said "language-like input." He cites research showing that children abandon picture coding and adopt word codes at about age five. There appears to be a biological maturation process involved. The adoption of a linguistic memory coding system coincides with (many aver it causes) an increase in STM capacity that is necessary to reading as described above. The ability to read, then, develops maturationally and is more sophisticated than talking.

Regarding what happens between eye fixation and STM, there are many theories currently espoused. Most involve hypothetical mechanisms and/or memories

subordinate to and feeding into STM. Crowder (14:254) points out that for immediate memory experiments, there is superior recall of material presented auditorily (presumably such material has quicker access to STM), while information presented in other modalities must be held elsewhere and recoded before being recalled. A proliferation of pre-STM storage units and shuttle systems are variously proposed by Posner, Bough and Crowder (14), including one that only responds to vowels, but not to consonants. This appears to be far-fetched. Gough tries to break down all of these processes into milliseconds and he fits a great deal of cognitive activity into a single second for even a passive receptor. Norman (14:280) further suggests the presence of an "attention mechanism" that selects stimuli at many levels of language and monitors the perceptual process of decoding. One wonders when the multiplication of memories and mechanisms will stop. If reaction time and immediate memory experiments can provide equal support for any model, how can we credit any of them?

In short, information processing approaches and memory models have yet to demonstrate their utility in this area of language. It would appear that a third question begs asking:

> What is the nature of language? What are the basic units it employs and how are they manipulated?

Without research, it is agreed that the basic units are those that appear in "deep structure." These are units of meaning, variously referred to as "sememes," "underlying morphemes," "primary semantic units," or simply "concepts." At this point, psycholinguistics cannot describe the cognitive processes involved in speaking, hearing, reading or listening, much less compare the processes used in each.

Still, some attempts are made. Klima (14) tries to show that English orthography reflects the morphological competence of native speakers. He asserts that spelling should be no obstacle to reading. It provides information about semantic relationships between words that sound different, but which are mutually derived - e.g. paradigm and paradigmatic. But Wayne O'Neill presents evidence that children do not use the same set of underlying morphemes and phonemes that Klima attributes to adults. This is probably largely related to the vocabulary used by Klima as illustrative, as it is unlikely that a first grader would have a morpheme (underlying or elsewhere) representing paradigm and paradigmatic. In fact, it might be asserted that Klima and O'Neill represent not the difference between adults and children but between educated literates, semi-literates, and illiterates. (How many semi-literates use words like paradigm?) In this case it is literacy - i.e., reading - that influences underlying morphemes; the orthography assigns as many as it reflects.

This is not unreasonable. It has already been established that reading is maturationally more sophisticated than speaking. If reading is a cognitive process that manipulates meaning units, then it can be considered active and assumed to interact with the units. Davey (2:282) found relationships between reading and cognitive style; it is only logical that any cognitive process or skill would be characterized by a style.

Specific evidence for determining the level of sophistication necessary for reading is provided by Cooper and Stevens (14). They both point out that the syllable is the minimal isolable acoustic unit. Savin and Liberman (14)

reason, therefore, that reading failures may be ascribed to children's inability to separate syllables into phonemes. Savin points out that for such children the spoken word cat and cow would have more in common than cat and dog; they are simply different syllables. Any system that tries to teach reading by mapping sounds onto single letters is doomed to failure if the student cannot segment words into phonemes.

In sum, learning to read by any method of instruction and with an alphabetic writing system requires linguistic awareness at the sound level. The potential reader must be able to recognize segments smaller than the syllable. As Shuy (24) points out, a reader must have a well-established phonemegrapheme relationship and morphophonemic spelling as well as other skills in order to become a successful syllable reader. The phonemic level processing required of the novice is not used by the skilled reader.

EDUCATIONAL RESEARCH: APPLIED PSYCHOLINGUISTICS

For applied research in psycholinguistics and reading, one must repair to educational publications and journals. Studies here are diversified, but can be grouped into a few general areas.

Phonics

The area of phonics - letter and sound correspondences in reading - is one of the major areas of attention in and out of reading research today. Part of the interest stems from Chall's book, Learning to Read: The Great Debate (5), in which she reviewed some of the available literature and concluded that all reading instruction should adhere to phonics principles, and that phonics instruction was superior to all other methods of learning to read.

Contrary to Chall, Goodman (10) states that the reader must make use of the graphophonemic cues along with syntactic and semantic information. Kolers (16) also states that the reading process is more than just the grapho-phonemic relationships. He says that linguistics can be applied to more than just these correspondences, because reading is a three stage process which consists of visual operations, sensitivity to grammar, and direct perception of meanings and relations.

Wardhaugh (35) lists some fallacies associated with phonics instruction and with basal reader series that purport to use a linguistic approach. He maintains that all "linguistics" approaches in reading are actually "phonics" systems, and he cites six phonics statements which cannot be supported by any linguistic research. According to Wardhaugh, many researchers have wasted time examining the use of worthless "phonic generalizations" in the classroom. In regard to Chall's endorsement of phonics he concludes: "If a bad phonics has proved to be more successful in beginning reading instruction than any other method, how much better would a good phonics be!" (35:86)

Comprehension

Bormuth defines comprehension as follows: "Comprehension ability is thought to be a set of generalized knowledge - acquisition skills which permit people to acquire and exhibit information gained as a consequence of reading printed language." (3:50) The author goes on to state the necessity for creating adequate question types that measure comprehension, not achievement. The two are differentiated by how one interprets the score of a test. He then goes on to demonstrate how appropriate questions can be written to test comprehension.

Wardhaugh (35) speaks about comprehension in terms of the reader's ability to relate the deep and surface structures of a sentence. Therefore, a syntactic as well as semantic interpretation must be made by the reader. To this extent, errors illuminate cognitive processes as well as or better than correct responses (35).

Goodman (6) talks about the reader's ability to go beyond the matching of oral names to graphic word shapes - "word calling" - as a necessary component of comprehension. He states that "a proficient reader is one so efficient in sampling and predicting that he uses the least (not the most) available information necessary." (8:164) Furthermore, the reader must use grapho-phonemic information, syntactic information, and semantic information. This means that the reader has to be aware of all language levels simultaneously and coordinate them in order to read.

Kolers (15), Goodman (8), and Holmes (13) have shown that reading is more than a visual process. The reader must first get meaning from the printed page before he identifies either words or letters. In other words, the reader cannot afford to concern himself with specific words and/or letters in order to comprehend. The reader uses various cues in order to comprehend. The reader uses various cues in order to reduce uncertainty and, as Goodman has pointed out, the reader uses three cure systems simultaneously and interdependently. These are the grapho-phonemic, syntactic and semantic.

In the 1968 NSSE Yearbook, Innovation and Change in [illegible]ing Instructic[illegible] (32) George Spache reviewed various linguistic positions and described the contributions that psycholinguistics has made to reading instruction in recent years. He cites work by Wendell W. Weaver and summarizes it, saying:

> Meaning is supported strongly by the lexical rather than by the structural words in these portions of the bilateral context. The implication is to be noted that, in attempting to teach students to use the context for meaning cues, they should be taught not to stop at a difficult word, but to interject a guess or to skip it and read on in the sentence. (32:267)

Cultural Differences

Sociolinguistics is involved with describing language differences as a function of social differences. Roger Shuy, in "Some Language and Cultural Differences in a Theory of Reading," states that a major task for sociolinguists

in the United States is "...to describe and analyze the language system of the urban ghetto." (24:39) He states that nonstandard speakers use a regular phoneme-grapheme correspondence to standard English, which is perceived as odd only by those who place value on such things. Because of the regularity of correspondence he does not consider it necessary to rewrite books to correspond to the graphic symbolization of the nonstandard English speaker; standard English symbolization is sufficiently arbitrary to be unrepresentative of standard English speech. He does advocate revision of materials in the interest of grammatical (syntactic) differences between standard and nonstandard English.

Rudine Sims in her doctoral dissertation, "A Psycholinguistic Description of Miscues Generated by Selected Young Readers During the Oral Reading of Text Material in Black Dialect and Standard Dialect," concludes that black urban children do not need materials that are dialect specific. She based this conclusion on the following two factors:

1. "Black dialect speakers in today's world are likely to have enough exposure to standard English to have gained receptive control of it, and to use it in their reading."

2. "The readers in this study, speakers of Black Dialect, were able to use a reading style which approximates standard English." (25:149)

Sims advocated using a language experience approach for beginning readers because it is the closest approximation to the way they learned to use the spoken modality of language.

As evidence that culture can influence the learning of reading, Halle (14) described the history of literacy among the Cherokee Indians. Before the coming of the white man, the Cherokee had a written language and almost 100% literacy. Typically, there was little formal instruction: an individual would simply decide that he wanted to learn to read, and that it was easy. Near mastery could be achieved in a few days. Learning to read was usually done later in life. Now that the United States government supervises reading instruction and requires the formal reading instruction for young children, literacy has fallen sharply. Reading is now generally regarded as difficult, pointless and alien. Miller and McNeil concur with Halle on this point and suggest that this "alienation of purpose" might explain the frequency of reading problems in urban ghettos and minority subcultures.

Pedagogical and Diagnostic Methods

Most reading curricula lean heavily on a single text or basal reading series. Carterette and Jones (4) present a study examining redundancy, sequential constraint, and mean word and sentence length in first, third and fifth level readers and in children's and adults' free reading choices. Higher level selections had less redundancy. It was also pointed out that, given the opportunity to choose, children select reading materials that are less redundant and have larger words and sentences than do basal readers. The results seem to indicate that children can handle materials with long mean word lengths and mean sentence lengths as long as the author uses a limited (though not necessarily

high frequency) lexicon. The authors regard their findings on "sound pattern redundancy" as very important. Their procedure was to transcribe normal adult and child speech and to feed these transcripts and some selections from basal readers into a computer; the computer noted that the basal readers had a more limited variety of letters than did any of the transcripts. If one is willing to consider this procedure valid, it offers further evidence that children are sophisticated speakers of their native language at six. The authors' conclusion - that early reading is made difficult because the basal readers use different language patterns - is still overdrawn. It contradicts psychoacoustic research on the redundancy of sound cues (18) and it assumes that reading skill is based on spoken language. As the phoneme, by definition, has no meaning, and its cognitive reality is founded on its use as a speech tool, it would seem unrelated to reading.

Hans Olsen presents the following criticisms of existing reading materials:

1. "There is a need to better integrate linguistic knowledge with other knowledge related to reading;"

2. "There is a need to better utilize existing linguistic knowledge in reading programs;"

3. "There is a need to test linguistic approaches and materials to determine the extent to which they are more or less appropriate than other approaches and materials;" and

4. "Classroom practitioners need more help in understanding linguistics and the application of linguistic principles in the teaching of reading." (22:286-287).

According to Goodman (9), a psycholinguistic approach to reading should be taken carefully and cautiously so that materials and instruction do not subvert its integrity. The psycholinguistic theory of meaning which distinguishes between deep and surface structure gives the practitioner and the researcher a basic idea of how the reader processes language, by virtue of this structural knowledge of the language. But the student is also a language learner to the extent that he is learning to use language (or find it) in a new modality.

Sims (25) advocated a language experience approach to make full use of the language knowledge the student already possesses. Torrey (34) takes a developmental view of reading maintaining that reading is learned, not taught, and that while strong verbal ability or cultural privilege may be instrumental in stimulating reading, neither is necessary. The student comes already equipped with syntactic and semantic knowledge of his language and he does best when he can translate print into these himself.

In homely terms, "experience is the best teacher." The language experience approach likens reading to playing tennis, the former being a cognitive skill and the latter a physical one. In playing tennis, the novice must get the feel of running and using his racket, but it is a matter of grouping known and natural movements. So in reading, the cognitive processes are not unnatural, but they must be exercised and practiced to come easily.

Presumably, the teacher is still necessary or at least useful in this process. Shuy offers a set of rules for syllable identification that teachers can present to students as they seek to decode new words. Goodman offers the miscue taxonomy to help teachers systematically evaluate students' reading difficulties at all language levels.

SUMMARY

The literature reviewed here suggests that reading is a cognitive process that translates visual stimuli into underlying language units. Comprehension depends on this translation which utilizes grapho-phonemic, syntactic and semantic levels of language. A skillful reader comprehends with fewer graphic cues. In other words, as a skilled speaker of a language can understand more from a distorted tape than a non-native speaker, so a skilled reader can successfully decode a mutilated or partial written message.

People do not process words letter by letter or even word by word any more than they hear phoneme by phoneme. Perception is active and takes the passage context into account. Since reading is more cognitively sophisticated than talking, it is learned later. With progressively better command of the language (speech) one becomes a better reader. There is a lower maturational limit for the ability to handle the symbolization involved in reading, but nearly all humans are able to achieve it (but only if they are taught).

While reading growth is enhanced by speech sophistication, learning to read does not depend on being able to speak. Therefore, dialectical differences related only to the sounds of language (as opposed to syntax or semantics) have little bearing on whether or not a student can read. The most important variable is cognitive readiness and the willingness or desire to read.

BIBLIOGRAPHY

1. Biemiller, A., "The Development of the Use of Graphic and Contextual Information as Children Learn to Read." Reading Research Quarterly, 1970, 6 (1), 75-96.

2. Blanton, W.E. and Bullock, T.L., "Cognitive Style and Reading Behavior." Reading World, 1973, 12 (4), 276-287.

3. Bormuth, J.R., "An Operational Definition of Comprehension Instruction." in Psycholinguistics and the Teaching of Reading, Goodman, K. and Fleming, J., Eds., IRA, Newark, Delaware, 1969, 48-60.

4. Carterette, E. and Jones, M., "Phoneme and Letter Patterns in Children's Language." in The Psycholinguistic Nature of the Reading Process, Goodman, K. Ed., Wayne State University Press, Detroit, 1973, 103-166.

5. Chall, J., Learning to Read: The Great Debate. McGraw-Hill, New York, 1967.

6. Chomsky, N., Aspects of the Theory of Syntax. MIT Press, Cambridge, Massachusetts, 1965.

7. Fodor, J., "Formal Linguistics and Formal Logic." New Horizons in Linguistics, J. Lyons, Ed., Penguin Books, London, 1970.

8. Goodman, K., "Analysis of Oral Reading Miscues: Applied Psycholinguistics Psycholinguistics and Reading, F. Smith, Ed., Holt, Rinehart and Winston, New York, 1973.

9. _____, "On the Psycholinguistic Method of Teaching Reading." Psycholinguistics and Reading, F. Smith, Ed. Holt, Rinehart and Winston, New York, 1973.

10. _____, "Psycholinguistics Universals in the Reading Process." Psycholinguistics and Reading, F. Smith, Ed., Holt, Rinehart and Winston, New York, 1973.

11. _____, "The Psycholinguistic Nature of the Reading Process." The Psycholinguistic Nature of the Reading Process, K. Goodman, Ed., Wayne State University Press, Detroit, 1973.

12. _____, "Words and Morphemes in Reading." Psycholinguistics and the Teaching of Reading, K. Goodman and J. Fleming, Eds., IRA, Newark, Delaware, 1969.

13. Holmes, D., "The Independence of Letter, Word and Meaning Identification in Reading." Psycholinguistics and Reading, F. Smith, Ed., Holt Rinehart and Winston, New York, 1973.

14. Kavanaugh, J. and Mattingly, I., (Eds.), Language by Ear and by Eye. MIT Press, Cambridge, Mass., 1972.

15. Kolers, P. "Reading is Only Incidentally Visual." Psycholinguistics and the Teaching of Reading, K. Goodman, Ed., IRA, Newark, Delaware, 1969.

16. _____, "Three Stages of Reading." Psycholinguistics and Reading, F. Smith, Ed., Holt, Rinehart and Winston, New York, 1973.

17. Koutsoudas, A., Writing Transformational Grammars, McGraw-Hill, New York, 1966.

18. Liberman, A., Cooper, F., Shankweiler, D., and Studdert-Kennedy, M., "Perception of the Speech Code.: Psychological Review, 1967, 74 (6), 431-461.

19. Miller, G., "Some Preliminaries to Psycholinguistics." Psycholinguistics and Reading, F. Smith, Ed., Holt, Rinehart and Winston, New York, 1973.

20. _____, "Some Psychological Studies of Grammar." American Psychologist, 1962, 11, 748-762.

21. _____, "Psycholinguistic Approaches to the Study of Communication." Journeys in Science: Small Steps-Great Strides, D. Arm, Ed., University of New Mexico Press, Albuquerque, N.M., 1967.

22. Olsen, H., "Linguistics and Materials for Beginning Reading Instruction." The Psycholinguistic Nature of the Reading Process, K. Goodman, Ed., Wayne State University Press, Detroit, 1973.

23. Saporta, S. (Ed.), Psycholinguistics, Holt, Rinehart and Winston, New York, 1961.

24. Shuy, R., "Some Language and Cultural Differences in a Theory of Reading." Psycholinguistics and the Teaching of Reading, K. Goodman and J. Fleming, Eds., IRA, Newark, Delaware, 1969.

25. Sims, R., A Psycholinguistic Description of Miscues Generated by Selected Young Readers During the Oral Reading of Text Material in Black Dialect and Standard English. Unpublished doctoral dissertation, Wayne State University, 1972.

26. Skinner, B., Verbal Behavior, Appleton-Century-Crofts, New York, 1957.

27. Slobin, D., Psycholinguistics, Scott, Foresman & Co., Glenview, Illinois, 1971.

28. Smith F., "Decoding the Great Fallacy." Psycholinguistics and Reading, F. Smith, Ed., Holt, Rinehart and Winston, New York, 1973.

29. _____, "The Learner and His Language." Psycholinguistics and Reading, F. Smith, Ed., Holt, Rinehart and Winston, New York, 1973.

30. _____, "Twelve Easy Ways to Make Learning to Read Difficult." Psycholinguistics and Reading, F. Smith, Ed., Holt, Rinehart and Winston, New York, 1973.

31. _____, Understanding Reading. Holt, Rinehart and Winston, New York, 1971.

32. Spache, G., "Contributions of Allied Fields to the Teaching of Reading." Innovation and Change in Reading Instruction, 67th NSSE Yearbook, Part II, University of Chicago Press, Chicago, 1968.

33. Torrey, J. "Illiteracy in the Ghetto." Psycholinguistics and Reading, F. Smith, Ed., Holt, Rinehart and Winston, New York, 1973.

34. _____, "Learning to Read Without a Teacher." Psycholinguistics and Reading, F.Smith, Ed., Holt, Rinehart and Winston, New York, 1973.

35. Wardhaugh, R., "Component Skills in Beginning Reading." Psycholinguistics and the Teaching of Reading, K. Goodman and J. Fleming, Eds., IRA, Newwark, Delaware, 1969.

36. Weber, R., "A Linguistic Analysis of First Grade Reading Errors." Reading Research Quarterly, 1970, 1 (3) 427-451.